GECSF
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9/29/88

Christine O. Gregoire
[redacted]
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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September 29, 1988

Mr. Barry York
Environmental Project Manager
Building 6, Room 211
General Electric Company
Schenectady, New York 12345

Dear Mr. York:

We appreciated the recent opportunity to meet with you to discuss the Phase 3 Remedial Investigation Report on the Mission Avenue facility in Spokane, Washington. A number of items were clarified as a result of the information presented by you and your consultants. However, there remain significant issues to be addressed.

This letter details requirements that need to be fulfilled before the remedial investigation can be considered complete, assuming new information does not indicate otherwise. Review and clarification of some of the issues discussed during the meeting of August 31 are also presented. The Phase 3 Remedial Investigation Report must be rewritten to incorporate the changes and additions specified in this letter before it can be approved by Ecology. Items have been numbered for reference purposes.

ADDITIONAL INFORMATION NEEDED

1. Include information from earlier site investigations so that the report can be used as the primary reference document for evaluating site conditions. Reference or include, as appropriate, specific tables and figures of previous reports to support statements made. Examples of the revisions needed include, but are not limited to, the comments listed in Attachment A.

2. General Electric has agreed to include information on the history of site operations in sufficient detail to support its conclusion that all potential sources of contamination have been identified and to support conclusions about the adequacy of contaminant delineation.

DELINEATION OF POLYCHLORINATED BIPHENYL (PCB) PLUME

3. General Electric has agreed that additional work is needed to delineate the PCB plume. However, we understand General Electric to

believe that the suspected PCB congeners can be dismissed as not representative, based on additional sample results (taken June 1988) presented at the meeting. Using these results General Electric has concluded that the PCB plume is defined in all but the longitudinal (downgradient) direction.

4. Ecology does not accept General Electric's conclusion that the PCB plume is defined in all but the longitudinal direction. It is based on centrifuged, rather than uncentrifuged, sample analysis results. Further, General Electric's conclusion is not supported by the information contained in the report. For example, PCBs and suspected PCB congeners were found in perimeter downgradient wells and suspected PCB congeners were detected in the deep wells both downgradient and near the west dry well. The detection of suspected PCB congeners has not been adequately addressed. The lateral and vertical extent of the PCB plume remain to be delineated and associated conclusions supported.

5. The results of the June 1988 ground water sampling round for PCBs cannot be considered adequate without uncentrifuged results of the same samples. Contaminant concentrations of centrifuged and uncentrifuged analysis can differ significantly. Application of the centrifuging procedure for PCB analysis is not a standard or approved technique and there is considerable uncertainty regarding its technical merits. Acceptable analyses must be standardized and referenced for consistency and comparability. Therefore, the results of samples prepared for PCB or other organic contaminant analysis by centrifuging cannot be used exclusively to support site characterization. Uncentrifuged sample analysis results must also be evaluated for all sampling efforts.

6. If sample splits from the June 1988 sampling round were also analyzed without centrifuging, please provide that information. If not, uncentrifuged results must be obtained to support an assessment of the extent of PCB contamination.

7. Modeling the distance and direction of PCB transport may be useful, but due to the uncertainties involved with several potential transport mechanisms, physical confirmation of the boundaries of the plume will be required.

8. The detection limit used for the analysis of samples collected in January 1988 is not as low as an appropriate cleanup level may require. The detection limit for ground water sample analysis for PCBs must be low enough to permit use of the results in risk assessment evaluations at the 10^{-6} level (i.e. approximately 5 parts per trillion) and to allow delineation of the plume at this level.

9. PCB analysis of soil samples by Farr, Freidman and Bruya, Inc. resulted in numerous significant peaks at 2.2 minutes, indicating the

presence of an unknown compound (Appendix D). This compound needs to be identified.

VOLATILE ORGANIC COMPOUNDS (VOCs)

10. VOCs have been identified in soil samples but there is uncertainty about their extent due to: sample results which differ significantly depending on the laboratory used; the affect of the drilling method on sample results; limited sample analyses (restricted to borings GA1 and MW-6); and unidentified significant peaks detected during analysis. Benzene, tetrachloroethylene and 1,1,1, trichlorethane found in perimeter downgradient wells also indicate that the areal extent of contamination by VOCs has not been adequately defined. At a minimum, additional ground water sampling, analysis, and evaluation of VOCs at appropriate detection limits is needed.

11. Volatile organic analysis of soil samples by Farr, Freidman and Bruya, Inc. resulted in several significant peaks of interest (Appendix D). The compound(s) associated with these peaks needs to be identified.

12. A positive result at or below the concentration of a recommended maximum concentration level warrants further investigation, given the site history and potential sources of contamination. The report's suggestion that the volatile organics are largely a result of background concentrations in the aquifer has not been supported by analytical results from wells upgradient and off-site. Remediation of contamination attributable to the site will be considered irrespective of the condition of the aquifer in general.

CHLORINATED BENZENES

13. Analysis for chlorinated benzenes in the ground water has been limited, given the concentration of chlorinated benzenes in dielectric fluids and their greater mobility than PCBs. Additional ground water sampling, analysis, and evaluation of chlorinated benzenes is needed. The method used must be reliable for detecting and reporting significant levels of all chlorinated benzene congeners. The report's conclusion that the distribution of PCBs in soil indicates the distribution of chlorinated benzenes may be premature without additional information.

PETROLEUM HYDROCARBONS

14. General Electric has agreed to include in the summary and conclusion section discussion of the total petroleum hydrocarbon results.

NEAR SURFACE SOIL AND UTILITIES CHARACTERIZATION

15. General Electric has agreed to include a description of historic site activities in the report to conclusively demonstrate that all utilities (dry wells, sumps, pits, tanks, overflow and outlet pipes, drainlines, drainfields, and associated structures) have been identified. If this cannot be demonstrated, additional investigation may be necessary.

16. General Electric has also agreed to include: a clear summary of all investigation results detailing the extent of contamination associated with each utility; an evaluation of the adequacy of contaminant delineation for individual utilities (including a description of data gaps); and any basis for conclusions reached.

17. General Electric has acknowledged that the present characterization of contamination in the near surface soil and in the soil beneath and surrounding individual utilities may not fully delineate the contamination. We understand General Electric to believe that the best approach at this stage of the investigation for these areas is to proceed with development and selection of a remedial action alternative and, if it becomes necessary, expand the scope of the remedial action in the field, rather than further define the extent of contamination at the present time.

18. General Electric's proposed approach to address the specific areas in the near surface soil and in the soil beneath and surrounding individual utilities where the extent of contamination has been investigated but not fully delineated is acceptable, contingent on the following requirements. General Electric must include in the development of associated remedial action alternatives, contingency plans that will assure adequate remediation and protection of human health and the environment should significantly more contamination than presently estimated be found to exist. Independent on-site verification of the adequacy of the remediation will also be required.

19. Additional investigation of the areas noted in items 17 and 18 must be conducted either prior to remediation, or during remediation as General Electric has proposed, to ensure that these areas are adequately characterized. Therefore, implementation of General Electric's proposed approach will preclude selection of a no-action alternative for remediation of these areas since it would be based on insufficient information.

CUTTING VERSUS DRIVE SAMPLE RESULTS

20. We understand General Electric to believe that the cutting sample results are not representative of conditions at a particular sampling

interval because of the potential delay in clearing all cuttings from the piping through which they pass. The soil sampling results of monitoring well MW-6 were reviewed during the meeting to support this conclusion.

21. A review of the soil sample results from the other borings does not necessarily support the same conclusion. The collection of cuttings samples was added to the sampling plan as a result of Ecology's concern over the effect that an air rotary drilling technique would have on sample integrity. Specifically, there is considerable potential in a soil with a predominance of coarse material for a significant portion of the fine grained material (containing the highest percentage of PCBs) to either be blown up the hole or out into the formation before a drive sample can be obtained. This effect is most noticeable in the upper 6 inches of the interval sampled. Sample recovery data show that the majority of the drive samples did not penetrate beyond this range. In some instances, the cuttings sample may be more representative of actual conditions than the drive sample. Therefore, because of the inconclusive nature of General Electric's interpretation, elevated PCB concentrations of cutting samples will not necessarily be assumed to represent carry-over from intervals previously sampled.

OTHER

22. A PCB detection limit of one part per million for the water samples from the Modutank may be too high, depending on plans for disposal of the water. Please provide plans for disposal of the soil and water collected as a result of drilling and sampling activities.

23. PCB Aroclor 1242 concentrations detected in Modutank soil samples are significant in comparison to Aroclor 1260. The ratio of concentrations for these Aroclors is potentially representative of what was encountered during drilling and may impact remediation efforts.

24. According to Brinkman and DeKok, the manufacturing of PCBs leads to the production of (and contamination by) over 60 congeners of dibenzofurans, including 2,3,7,8-tetra-CDF and other potentially carcinogenic congeners. Include a statement addressing the significance of this as it relates to characterizing the site. (Brinkman, U., and DeKok, A. 1980. Production, Properties, and Usage. In "Halogenated Biphenyls, Terphenyls, Napthalenes, Dibenzodioxins and Related Products" edited by R.D. Kimbrough. Elsevier/North-Holland Biomedical Press, Oxford. Chapter 1.)

25. Please provide a copy of the procedural review report of the on-site inspection conducted by Golder Associates's analytical chemist.

26. The nature and extent of contamination at the site must be sufficiently characterized and conclusions adequately supported so that justifiable remedial action decisions can be made. In general, include in the report more explanation of investigation results, more supporting information, and additional discussion of the rationale for conclusions reached; especially when discussing mechanisms of contaminant transport or when positive laboratory results are dismissed as insignificant.

APPENDICES

27. General Electric has agreed to the following:

    Appendix B: to note the water table levels on the log for monitoring well MW-9U/L.

    Appendix E: to individually stamp amended and void data sheets as such.

    Appendix F: to include the omitted topographic map.

28. Locating data in these appendices cannot be done efficiently. General Electric has agreed to include an index to the appendices, a summary sheet listing the contents of each laboratory report, and to tab each laboratory report.

HEALTH AND SAFETY

29. A risk assessment by EPA's Office of Research and Development found that the major pathways of PCB exposure to surrounding populations were ingestion, dermal exposure, and inhalation of vapors. Inhalation of PCBs adsorbed to particulates is believed to be a minor pathway compared to inhalation of PCB vapor. General Electric has agreed to investigate the possibility of adverse health effects as a result of PCB vapors affecting the individual who works in an office located at the site. (U.S. Environmental Protection Agency. 1986. Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup. Washington, D.C.: Office of Research and Development. Exposure Assessment Group. Office of Health and Environmental Assessment).

30. Ecology is concerned about the transport of contaminated materials from the site due to traffic on the access road and about the relative ease of public access either through the unlocked gate during the day or the unfenced area along the northern edge of the

site. General Electric agreed to investigate Ecology's concerns during a visit planned for September 1. It was also agreed that Washington Water Power will be advised by General Electric of the specific hazards of activities at the site. Please notify Ecology as soon as possible of the steps that will be taken to secure the site.

It will be assumed that General Electric concurs with the content of this letter and Attachment A, unless Ecology receives a written response detailing the specific reason(s) that General Electric does not concur with a particular statement(s). Ecology will consider any rationale that is more than a restatement of information presented at the meeting of August 31, 1988.

Any plans for future work on the site need to be reviewed and approved by Ecology prior to implementation to avoid potentially costly misunderstandings regarding what is required.

We look forward to your response. If you have any questions please do not hesitate to contact me.

Sincerely,

Brad J. Ewy, Site Manager
Hazardous Waste Investigations and
Cleanup Program

BJE:rs

cc: Claude Sappington, ERO
John Anicetti, Spokane County Health District
Douglas Morell, Golder Associates, Inc.

ATTACHMENT A

31. Include every positive laboratory result in the text and/or tables. Discuss in the main body of the report all positive results. In addition, combine all positive results for individual contaminants (regardless of the testing laboratory used, whether they are duplicate samples or the location taken) in at least one soil or ground water sample results table; also include dates sampled, analysis methods, and detection limits.

32. Section 1.2: Include more information about the activity at the site during its operation. Give particular attention to disposal practices or releases to utilities. For example, summarize the relevant information contained under Facility Description (pages 1-4 to 1-7) and Figure 1-2 in the Phase 1 Report, in Figure 2-6 in the Phase 2 Report, and present other information as outlined in this letter.

33. Section 2.1: Reference the Phase 1 Report for results of the initial site inspection.

34. Section 2.2: State that samples collected in trenches were collected at three depth intervals. Indicate on Figure 2.1 which pit locations were composited.

35. Refer to drill hole locations as identified in Figure 2.1 (i.e. D1, D2, D3) when presenting sampling depths.

36. Include figures similar to Figures 2.2 and 2.4, which summarize the distribution of PCB concentrations at the 1, 2, and 3 foot depths. Identify composite samples that are included in figures. Highlight sample locations where the vertical extent of contamination has not been defined to 1 ppm PCB.

37. Include the metals data from the Phase 1 Report (Tables 1-1, 1-3 (plus results of metals analysis by ARI), 4-2 and 4-4). List background metal concentrations and sample locations.

38. Section 2.4: Include Table 2-4 of the Phase II Report, and note sampling dates.

39. Figure 2.3: Number for reference purposes the pit sample locations and reference Tables 3-3 and 3-4 of the Phase 2 Report for results of the shallow soil samples.

40. Reference Tables 3-5 and 3-6 of the Phase 2 Report for results of the subsurface soil samples.

41. Reference Table 4-1 and Figure 4-1 of the Phase 2 Report for results of the concrete, soil, and wipe sampling.

42. Section 3.4 and Table 3-2: Method 8080 is incorrectly cited for ground water analysis for PCBs.

43. Section 3.5.1: Include the surface sample results from Phase 3 monitoring well borings on the PCB concentration map, Figure 2.4. This will extend the 1 ppm PCB concentration contour.

44. Section 3.5.2: Revise Table 3-3 to include detection limits, and include a similar table for all soil samples collected.

45. Section 4.3.1: Refer to a summary table containing on-site laboratory results of VOC analyses.

46. Section 4.3.2: Include PCB sample concentration values by location on Figure 4.3.

47. Section 4.3.3: State which soil samples were analyzed for metals and petroleum hydrocarbons, and where the analytical results can be found.

48. Section 4.4: Reference Table 4-5 for selected results and Table 3-3 for analyses conducted. The sampling date should be included in the text and in Table 4-5. Correct the units for petroleum hydrocarbons in Table 4-5.

49. Section 4.4.2: Refer to a table containing all positive PCB results and refer to Figure 5.1. Cite where all laboratory data sheets of PCB results are located.